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**Reports on the Administration  
of the Mints at Calcutta and  
Bombay for the year 1918-19  
with a review.**

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CALCUTTA  
SUPERINTENDENT GOVERNMENT PRINTING, INDIA  
1919





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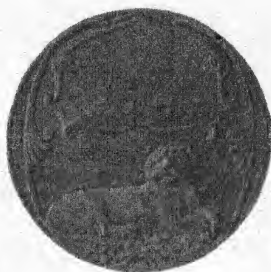
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# Review of the Reports on the Administration of the Mints at Calcutta and Bombay for the year 1918-19.

## I.—Working of the Mints.

### *Receipts, etc., of Gold.*

1. The imported gold acquired during the year at the two Mints under the Gold Import Act of 1917 amounted to Rs. 2,94,872 against Rs. 18,36,66,547, the value of gold acquired during the previous year. The following table gives the classification of the receipts on account of acquired gold and of other minor receipts at the two Mints from miscellaneous sources :—

	CALCUTTA.	BOMBAY.	TOTAL.
	Value in Rupees.	Value in Rupees.	Value in Rupees.
Sovereigns and half sovereigns including short weight and uncurrent coin . . . .	20,051	57,812	77,863
Foreign coin . . . .	581	247	828
Gold bullion . . . .	2,31,836	5,289	2,37,125
TOTAL . . . .	2,52,168	63,348	3,15,516

Besides the above, a consignment of 1,500,000 sovereigns was received at the Calcutta Mint from the Commonwealth Bank, Sydney, under an arrangement whereby sovereigns coined at the Sydney Mint were obtained in exchange for an equivalent amount of gold bullion shipped to Australia from the gold holdings in the Currency Reserve. The total value of bullion and foreign coin shipped abroad on this account and on account of the payment made in gold to the United States of America for silver received therefrom under the Pittman Act, amounted to Rs. 5,32,94,147. Gold coin and bullion valued at Rs. 1,24,79,691 were also issued to Native States in exchange for rupees.

2. The Bombay Mint continued to receive the usual consignments of gold from the Indian Mines for safe custody on behalf of the Bank of England. £1,671,658 worth of South African gold held at the Bombay Mint for safe custody, was shipped during the year on behalf of the Bank of England.

### *Coinage of Gold.*

3. During the year under review, a branch of the Royal Mint was opened at Bombay with the object of coining sovereigns in India, the large accumulations of gold acquired under the Gold Import Act being utilised for the purpose. The actual coinage was begun in August 1918, and 1,295,872 sovereigns were coined during the year.

4. Pending the completion of the arrangements at the Branch Royal Mint, power was taken by legislation to coin in India gold mohurs of the same weight and fineness as the sovereign. Altogether 2,109,703 pieces of these new coins of the nominal value of Rs. 3,16,45,545, were struck at the Bombay Mint.

### *Coinage of Silver.*

5. The quantity of silver coinage carried out at the Mints during the year under review, constitutes a new record, the total nominal value of the Government of India coinage alone being Rs. 52,05,35,309 as compared with Rs. 30,77,07,326, the corresponding figure for 1916-17, which had hitherto been the heaviest coinage recorded. The details of the silver coinage executed at the two mints for the Government of India during 1918-19 are given in the statement below :—

	CALCUTTA.	BOMBAY.	TOTAL.
	Value in Rupees.	Value in Rupees.	Value in Rupees.
Rupees . . . . .	26,04,00,000	24,06,06,326	50,10,06,326
Half-rupees . . . . .	17,22,876	51,62,333	68,85,209
Quarter-rupees . . . . .	1,26,43,774	...	1,26,43,774
TOTAL . . . . .	27,47,66,650	24,57,68,659	52,05,35,309
TOTAL FOR 1917-18 . . . . .	9,91,62,854	13,95,44,433	23,87,07,287

Uncurrent coins of the nominal value of Rs. 55,43,733 were received at the two Mints for recoinage during the year. Apart from those, the coinage was from purchased silver, a considerable portion of which consisted of American dollars and other silver made over by the United States under the Pittman Act. The demand for fractional silver increased largely and the coinage of half and quarter rupees during the year was exceptionally heavy.

6. In addition the following subsidiary silver coinage was executed at the Bombay Mint during the year on behalf of other Governments :—

Denomination of coin.	Tale.	Output value in standard tolas	Government on whose behalf the coinage was executed.
Straits 10 cents . . . . .	8,700,284	8,77,700	} Straits Government.
„ 5 „ . . . . .	3,210,929	1,60,894	
Egyptian ten piastres . . . . .	90,001	98,168	} Egyptian Government.
„ five „ . . . . .	180,007	98,190	
„ two „ . . . . .	1,600,036	3,49,363	

### *Nickel and Bronze Coinage.*

7. Nickel one anna pieces of the nominal value of Rs. 50,43,279 were coined at the Bombay Mint against Rs. 36,29,167 worth minted in the previous year. Of the new nickel two-anna coins as many as 85,990,655 pieces of the nominal value of Rs. 1,07,48,832, were turned out at the two Mints as compared with Rs. 36,75,945 the value of nickel and silver coins of the same denomination coined during the previous year. In addition to these, 872,069 nickel five millieme pieces valued at Rs. 67,040 were struck at the Bombay Mint on behalf of the Egyptian Government.

8. The bronze coinage was as usual carried out entirely at the Calcutta Mint and consisted of pice, half pice and pie-pieces of the aggregate value of Rs. 20,10,600 as compared with Rs. 16,03,600 in 1917-18. The Calcutta Mint

also coined Rs. 52,500 worth of copper cents for the Straits Government and Rs. 1,20,450 worth of bronze pennies and half pennies for the Australian Commonwealth.

*Operative losses.*

9 *Gold*.—The operative loss on the gold coined at the Bombay Mint allowing for adjustment of gains and losses, amounted to 1,415·01 tolas fine giving a rate of loss of 66·18 tolas per lakh of fine tolas coined.

*Silver*.—The operative loss on the silver coinage worked out to 114·7 at the Calcutta Mint and 105·79 at the Bombay Mint per lakh of standard tolas coined. The somewhat higher rates of loss are to be attributed to the different kinds of Silver operated on during the year under review.

*Nickel*.—The total operative loss written off during the year at the Bombay Mint on account of nickel coinage amounted to 63 $\frac{3}{8}$  maunds, giving a percentage of 0·65 on the metal coined. The operative loss on the nickel coinage executed at the Calcutta Mint worked out to 2·46 per cent on the metal coined.

*Bronze*.—The operative loss on the bronze coinage executed for the Government of India including melting and coining losses amounted to 205 maunds giving a rate of loss of 1·22 per cent of new coin.

*Revenue and Expenditure.*

10. The statement below gives the usual figures of the revenue and expenditure including interest on capital outlay and other *pro forma* charges of the two Mints for the years 1917-18 and 1918-19 :—

Year.	REVENUE.			EXPENDITURE.		
	Calcutta	Bombay.	Total.	Calcutta.	Bombay.	Total.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1917-18	23,63,157	32,42,653	56,05,810	16,18,309	13,46,353	29,64,662
1918-19	61,31,020	55,05,406	1,19,36,426	29,62,595	19,88,612	49,51,207

11. As will be seen there was a substantial increase in the revenue at both the Mints and this is chiefly due to the larger receipts on account of seignorage on rupee coinage and other similar duties charged on coinage executed for Foreign Governments. The following table compares the revenue derived from this source with the corresponding figures of the previous year :—

Year.	Calcutta.	Bombay.	TOTAL.
	Rs.	Rs.	Rs.
1917-18	18,94,429	27,72,265	46,66,694
1918-19	55,86,398	49,92,733	1,05,79,131

12. The expenditure on salaries and establishments at the two Mints compares as follows with that incurred during 1917-18 :—

	CALCUTTA MINT.			BOMBAY MINT.			BOTH MINTS.		
	1917-18.	1918-19.	Increase + or Decrease— in 1918-19.	1917-18.	1918-19.	Increase + or Decrease— in 1918-19.	1917-18.	1918-19.	Increase + or Decrease— in 1918-19.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Fixed establishment	2,13,716	1,91,311	—22,405	2,24,256	2,25,112	+856	4,37,972	4,16,423	—21,549
Temporary establishment and overtime pay	2,25,300	5,89,819	+3,64,519	2,98,634	5,35,339	+2,36,705	5,23,934	11,25,158	+6,01,224
TOTAL	4,39,016	7,81,130	+3,42,114	5,22,890	7,60,451	+2,37,561	9,61,906	15,41,581	+5,79,675

The heavy pressure under which the Mints had to work resulted in a considerable increase in the expenditure on temporary establishment and overtime pay.

*Special works.*

13. In anticipation of the receipt of large consignments of dollar silver from America, experiments were begun at the Calcutta Mint early in the year with a view to making special arrangements for refining a portion of these consignments on their arrival in India. By the end of the year a large Refining shed had been completed fitted with furnaces capable of dealing with large quantities of silver. The preliminary arrangements in connection with the coinage of gold entailed a considerable amount of extra work at the Bombay Mint.

*Munitions and other miscellaneous work.*

14. During the earlier months a small amount of munitions work was carried on at the two Mints, consisting as usual of the manufacture of copper driving bands for shell bodies, a few repairs and other minor works for Military Departments and the red cross. The Mints were also engaged on a certain amount of ordinary miscellaneous work such as the manufacture of medals, badges and dies, the manufacture and adjustment of scales and weights and miscellaneous supplies and repairs undertaken for other Government departments and the public.

15. The receipts on account of miscellaneous work done at the two Mints and the cost were as follows :—

Year.	CALCUTTA MINT.			BOMBAY MINT.			BOTH MINTS.		
	Cost of work done.	Amount realised.	Profit.	Cost of work done.	Amount realised.	Profit.	Cost of work done.	Amount realised.	Profit.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1917-18	3,33,263	4,05,143	71,890	1,13,563	1,59,419	45,856	4,46,816	5,64,562	1,17,746
1918-19	3,37,506	3,80,048	42,542	63,599	96,031	32,432	4,01,105	4,76,079	74,974

The Bombay figures include a sum of Rs. 30,872 on account of melting fees on Indian Mine Gold deposited at the Mint and similar fees on other gold silver and copper received from the public.

*Counterfeit Coins.*

16. *Treasuries.*—There was a considerable reduction in the number of counterfeit silver coin of the several denominations cut at treasuries during the year as will appear from the following figures :—

	Rs.	½ Rs.	¼ Rs.	⅛ Rs.	TOTAL.
1917-18	95,208	4,737	6,781	4,454	111,180
1918-19	43,951	2,811	4,599	5,026	56,387

The following table gives the provincial distribution of the figures for the year 1918-19 :—

Province.	Rs.	½ Rs.	¼ Rs.	⅛ Rs.	TOTAL.
India	10,714	464	532	363	12,073
Madras	5,461	418	738	1,558	8,175
Bombay	5,509	253	796	799	7,357
Bengal	3,623	398	447	432	4,900
United Provinces	7,037	393	681	744	8,855
Punjab and North-West Frontier	2,030	130	269	198	2,627
Burma	2,804	363	642	493	4,242
Bihar and Orissa	4,460	256	236	275	5,227
Central Provinces	797	39	64	48	948
Assam	1,516	97	194	176	1,983
TOTAL	43,951	2,811	4,599	5,026	56,387

Of the 43,951 counterfeit rupees no less than 18,813 were detected at Railway Cash Offices, the heaviest receipts being Rs. 3,833 from the East Indian Railway, 1,934 from the Madras and Southern Mahratta Railway, 1,876 from the Jodhpur-Bikanir Railway and 1,645 from the Bengal and North-Western Railway.

*Mints.*—Counterfeit silver coins numbering 4,936 were received at the two Mints during the year against 11,041 in the preceding year. The details of the two years are given in the statement below :—

	Received in remittances of uncurrent coins from Treasuries.		Received from Treasuries and other provinces under standing orders.		Received at the Mints for examination.	
	1918-19.	1917-18.	1918-19.	1917-18.	1918-19.	1917-18.
Rupees . . . . .	1,053	2,826	1,176	2,875	1,016	3,294
Half-rupees . . . . .	46	93	103	281	46	53
Quarter-rupees . . . . .	206	331	316	305	187	127
One-eighth-rupees . . . . .	276	577	274	238	237	41
	1,581	3,827	1,869	3,699	1,486	3,515

The counterfeits received for examination at the Mints were with few exceptions, poor imitations and of inferior composition.

17. The following table compares the number of offences against coinage brought to trial during the calendar year 1917 with the corresponding figures of the previous year. There was a substantial reduction both in the number of cases tried and the number of persons convicted.

	NUMBER OF CASES BROUGHT TO TRIAL.		NUMBER OF PERSONS TRIED.		NUMBER OF PERSONS CONVICTED.	
	1917.	1918.	1917.	1918.	1917.	1918.
Madras . . . . .	32	18	55	28	30	9
Bombay . . . . .	47	32	60	38	42	25
Bengal . . . . .	26	67	41	84	29	47
Bihar and Orissa . . . . .	7	4	5	8	4	3
United Provinces . . . . .	45	40	53	49	41	36
Punjab . . . . .	36	29	49	53	33	38
Burma . . . . .	66	70	93	87	56	57
Central Provinces and Berar . . . . .	11	17	15	22	10	11
N.-W. Frontier Province . . . . .	3	...	4	...	4	...
Assam . . . . .	15	6	20	6	16	4
Delhi . . . . .	4	1	6	1	1	1
Baluchistan . . . . .	2	1	2	1	2	...
Central India Agency . . . . .	28	13	35	15	25	12
Rajputana Agency . . . . .	21	12	27	15	10	8
Hyderabad . . . . .	5	3	8	4	5	4
Mysore . . . . .	11	2	11	6	10	3
Baroda . . . . .	3	...	3	...	2	...
TOTAL . . . . .	262	315	487	417	320	258

18. The Mint Mastership at Bombay was held throughout the year by Major G. H. Willis, C.I.E., M.V.O., R.E. Lieutenant-Colonel A. L. C. McCormick held charge of the Calcutta Mint, with the exception of the period from 2nd August 1918 to 26th February 1919, during which he was on leave, when Lieutenant-Colonel J. J. Bourke, I.M.S., held charge.

## II.—Working of the Assay Offices.

### *Number of assays.*

19. The following statement compares the number of gold and silver assays made in 1918-19 with that in the previous year:—

YEAR.	CALCUTTA ASSAY OFFICE.		BOMBAY ASSAY OFFICE.	
	Gold.	Silver.	Gold.	Silver.
1917-18 . . . . .	2,643	32,505	9,040	48,111
1918-19 . . . . .	2,829	70,451	13,235	74,723

The increase in the number of silver assays made at both offices was due to the heavy rupee coinage executed at the Mints during the year. Of the 13,235 gold assays carried out at the Bombay Assay office, 6,960 were done for the Mint and chiefly represented work done in connection with Indian gold coins.

### *Average fineness of silver melting.*

20. The average fineness per mille of silver meltings for the Government of India coinage during the year was as follows:—

	Calcutta.	Bombay.
Rupees . . . . .	916·124	915·971
Half-rupees . . . . .	916·076	...
Quarter-rupees . . . . .	915·699	...

### *Gold in silver coins.*

21. The average of gold found by monthly parting assays in the silver pyx coins in the two Mints is shown below:—

	Calcutta	Bombay.
Rupees . . . . .	0·058 <i>per mille</i> .	0·040 <i>per mille</i> .
Half-rupees . . . . .	0·082    ,,	0·045    ,,
Quarter-rupees . . . . .	0·085    ,,	...

### *Pyx trials of silver coins.*

22. The following table gives a summary of the results of the pyx trials in the two Mints:—

	TRIALS FOR WEIGHTS.			TRIALS FOR FINENESS.				
	Number of trials made	Total number of coins weighed.	Average weight in grains.	Number of trials made.	Total number of coins assayed		Average fineness <i>per mille</i> of coins assayed.	
					Singly.	In groups after melting.	Singly.	In groups after melting.
<i>Calcutta.</i>								
Rupees . . . . .	2,630	26,300	180·031	2,610	13,797	64,473	916·531	916·753
Half-rupees . . . . .	19	190	89·981	19	135	435	916·579	916·889
Quarter-rupees . . . . .	144	1,440	45·026	144	942	12,018	916·443	916·597
<i>Bombay.</i>								
Rupees . . . . .	2,406	24,100	179·999	2,406	12,645	48,140	916·509	916·517
Half-rupees . . . . .	103	1,030	89·998	103	595	2,060	916·629	916·668

23. The post of Assay Master, Calcutta, was held by Lieutenant-Colonel J. J. Bourke, I.M.S., from the beginning of the year till 1st August 1918, by Dr. W. A. K. Christie, from 2nd August 1918 till 6th February 1919, and by Major H. B. Drake, I.M.S., from 7th February 1919 till the end of the year.

The Assay Mastership, Bombay, was held by Lieutenant-Colonel F. Cunnyngame Hughes, I.A., from 28th April 1918, the date of retirement of Lieutenant-Colonel J. Lloyd Jones, I.M.S., to the end of the financial year.

•  
*General.*

24. The amount of coinage executed at the two Mints during the year under review, is the heaviest on record, the tale of coins minted being 545,996,049 at the Calcutta Mint and 356,405,149 at the Bombay Mint, including 2,109,703 gold mohurs. Great credit is due to the Mint and Assay Masters and their staffs for their ready response to the heavy demands made on them and for the efficient way in which the exceptionally large amount of work thrown on their departments was carried out.

CALCUTTA ;  
*The 4th September 1919.*

W. ALDER,  
*Offg. Controller of Currency.*





# REPORT ON THE ADMINISTRATION OF THE CALCUTTA MINT FOR 1918-19.

No. 1710, dated 12th July 1919.

From—Lieutenant-Colonel A. L. C. McCORMICK, C.I.E., R.E., Master of the Mint,  
Calcutta,

To —The Controller of Currency.

I have the honour to submit a report on the operations of the Calcutta Mint together with the prescribed statements, for the financial year 1918-19.

2. Lieutenant-Colonel J. J. Bourke, I M.S., Assay Master, held charge of this Mint from 2nd August 1918 till 26th February 1919, during a period I was on leave.

3. The year 1918-19 has been a most active one for the Calcutta Mint, as the total coinage executed was almost the double of that completed in 1916-17, the previous record year.

During the month of March the total silver, nickel, and bronze coinages approximated to 69 million pieces.

Figures showing the silver, nickel, bronze and copper coinages for the last three years are given below :—

Year.	Tale.	Value.		
		Rs.	A.	P.
1916-17 . . . . .	239,754,053	16,35,52,306	4	0
1917-18 . . . . .	289,563,493	10,23,03,819	14	0
1918-19 . . . . .	545,996,049	28,66,96,700	8	0

## GOLD.

4. *Coinage*.—No gold coinage was executed during the year.

5. *Receipts*.—No tenders of gold coin on currency account were received from the Presidency Banks or the public.

A consignment of sovereigns was, however, received on currency account from the Commonwealth Bank, Sydney. These coins are classified below :—

Tale.	Classification.	Nominal Value.
		Rs.
1,499,632	Sovereigns of current weight . . . . .	2,24,94,480
368	Defective Sovereigns unfit for re-issue . . . . .	5,520
1,500,000	Nominal value TOTAL .	2,25,00,000

6. Acquisitions of gold coin and bullion under Ordinance III of 1917 yielded Rs. 2,32,093 worth of gold, as detailed, against Rs.8,35,97,901-1-5 in the previous year :—

Tale.	Description.	Value as per currency account.		
		Rs.	A.	P.
1,365	Sovereigns and Half-sovereigns . . . .	20,051	10	0
25	American and Peruvian coin . . . .	581	6	6
Tolas 9,698·65	Bar Gold . . . . .	2,11,459	11	0
	TOTAL .	2,32,092	11	6

7. There were no receipts of gold coin and bullion during the year on Treasury account.

8. A miscellaneous receipt of two 15 rupee gold coins was received from the Mint Master, Bombay, for the Mint museum, and the coins have been placed in the Mint show case.

9. Demands for gold medals, miniatures, and Indian Title Badges necessitated the purchase under Government sanction, of fine gold to the value of Rs. 20,376-10-8 to replenish stock.

10. *Issues.*—Under orders received from the Controller of Currency, the following remittances of gold were made leaving a nil balance in the currency chest at the Mint :—

Remitted to	Description of gold.	Value as per currency account.		
		Rs.	A.	P.
Currency Office, Calcutta	Sovereigns and Half-sovereigns .	2,25,12,945	0	0
Mint Master, Bombay .	Foreign coin and bars . . . .	6,63,20,517	15	2
Agent, Nepal Durbar .	Bars . . . . .	36,75,311	14	0
Treasury Officer, Darbhanga.	„ . . . . .	14,94,630	7	0
Treasury Officer, Motihari	„ . . . . .	7,98,051	13	6
	TOTAL .	9,48,01,457	1	8

The gold coin and bullion remitted to Bombay was for coinage.

The delivery of gold bars valued at Rs. 36,75,311-14-0 to the Agent, Nepal Durbar, was in payment for silver Mohari coins received into the Mint and for British India Rupees received into the Calcutta Currency Office and certain district treasuries.

The gold bars forwarded to the Treasury Officers at Darbhanga and Motihari and finally delivered by them to the Agent, Nepal Durbar, were on a similar account.

11. No remittances of gold from Mint balances were made to England during the year under review.

## SILVER.

12. *Receipts*.—The receipts of silver comprised (a) Bar silver, American dollar silver in the form of bars, American crushed and mutilated dollar coins, Mexican dollars, Straits Settlements dollars (received from the Mint Master, Bombay), and Mohari coins received from the Nepal Durbar. The total amount of these receipts was 279,319,902·9 standard tolas, the invoice value of which was Rs. 29,72,87,799-7-2.

Details of these receipts are given below :—

Classification.	Standard tolas.	Invoice value.		
		Rs.	A.	P.
Fine Bar Silver . . . . .	93,280,719·2	9,95,69,491	3	9
Dollar „ (American) . . . . .	138,410,517·0	14,70,99,727	9	0
Crushed and mutilated American Dollars . . . . .	33,828,985·9	3,66,11,426	15	0
Mexican Dollars . . . . .	9,849,047·9	95,26,903	6	0
Straits Settlements Dollars . . . . .	2,456,157·5	24,85,774	15	0
Mohari Coins . . . . .	1,994,475·4	19,94,475	6	5
TOTAL . . . . .	279,319,902·9	29,72,87,799	7	2

In addition a consignment of Straits Settlements dollars, the standard value of which amounted to 244,941·2 standard tolas, was received on Treasury account from the Mint Master, Bombay.

All the fine silver and Mexican dollars, also the American dollar bars and crushed coins not refined, were placed into direct alligation. The consignment of Mohari coins was premelted and valued on the weight after premelting and on the fineness reported by the Assay Master.

(b) Withdrawn and uncurrent coin from treasuries for recoinage into new coin.

The nominal value of these receipts was Rs. 40,24,714-2 as detailed in the following table :—

Classification.	In lakhs of rupees.
Government Rupees and half rupees of 1835 . . . . .	2·05
„ „ „ 1840 (1st issue) . . . . .	4·50
„ „ „ „ (2nd issue) . . . . .	13·06
Coins, shroff marked, dumb and defective . . . . .	2·96
„ worn . . . . .	14·54
„ reduced . . . . .	·07
„ Soldered . . . . .	2·90
George V. 1911 coins . . . . .	·13
Current weight coins unnecessarily out at Treasuries . . . . .	·03
	40·24

13. Silver to the value of Rs. 6,059-2-4 was purchased locally to replenish stock for medals, etc.

14. *Coinage*.—The silver coinage executed for the Government of India during the year was exceptionally heavy and established a new record. It exceeded by 124,757,741 pieces the silver coinage for 1916-17, which had hitherto been the heaviest coinage recorded.

15. The maximum silver coinage carried out in any single month was 501 lakhs of rupees in December 1918.

16. *Percentage of good coins*.—The percentages of good coins obtained from the weight of ingots broken down in the Laminating Department is tabulated below :—

Denomination of coin.	Weight of ingots rolled in lakhs of tolas.	Percentage of good coin.
Rupees . . . . .	4001.77	65.1
Half rupees . . . . .	27.75	62.1
Quarter rupees . . . . .	199.94	63.2

These percentages are fairly satisfactory when compared with the percentages for 1916-17, in which year there was also a heavy coinage.

The Mint was again constantly called upon to work rupees and small silver coins concurrently, which undoubtedly has adversely affected the year's percentage figures.

17. *Pyx trials*.—The Assay Master's report on the Pyx coin sent to him for test show that the weight and fineness of the silver coinage was maintained at the prescribed standard.

18. *Silver refining operations*.—Anticipating the landing in India on Government account of large consignments of dollar silver from America, enquiries were received from the Controller of Currency early in the year, asking if this Mint could undertake to refine a portion of these consignments on their arrival.

In the Calcutta Mint, at the time, there were only two small country cupelling furnaces capable of refining about 3,000 tolas of silver daily. Experiments were commenced with these and with enlarged native pattern ground cupels, the refining being carried out by means of potassium nitrate, but the ground cupels were found extremely wasteful of silver and too slow in action to be of much use.

19. A large reverberatory furnace capable of refining about a ton of metal was then built close to the Mint Power Station chimney (with which the furnace was ultimately connected) but, unavoidably, on land belonging to the Port Commissioners as a suitable site was not available elsewhere. A first experiment with this furnace was not quite satisfactory, except in the matter of draught, as the hearth gave way and had to be reconstructed with more suitable materials. After it had been re-built, a second experiment proved more successful, although even then difficulties were experienced at the pouring gate necessitating the substitution of a different pattern gate.

20. In the meantime other experiments had been conducted in the Melting Departments of the Mint, where the silver had been melted in ordinary plumbago crucibles with potassium nitrate with considerable success.

Finally it was decided to employ this latter method entirely and to use the reverberatory furnace to melt the skimmings which resulted from the crucible process.

21. Later on with the kind permission and assistance of the Port Commissioners a shed, No. 1, was built to protect this furnace and also to contain large cupelling furnaces, etc.

By the end of the year one of these cupelling furnaces had been completed and plans for two others were under preparation, for erection early next year.

22. Plans for two extra sheds were also under preparation at the end of the year. These sheds, Nos. 2 and 3, will be built near shed No. 1 and will contain furnaces, a dross washing and a dross grinding plant. When these buildings are erected and furnished, the Mint will at last be in possession of a complete and self-contained refining unit which it has been in need of for many years.

23. As regards the sites for the sheds the Government of India has been asked to acquire the necessary land from the Port Commissioners.

24. Referring again to the reverberatory furnaces approximately fifteen lakhs of tolas of skimmings including litharge, etc., were remelted in the furnace, and this considerably relieved work in the Melting Department, and saved the expenditure of many crucibles.

25. The total amount of dollar silver refined in ground cupels, furnace, and crucibles was 16,541,987·7 standard tolas, and the refined silver recovered amounted to 16,261,580·8 standard tolas. The loss on these operations excluding some small experimental losses, was therefore 280,406·9 standard tolas or 1,695·1 standard tolas per lakh.

### SILVER OPERATIVE LOSSES.

26. I append below the usual balance statement showing the loss sustained in silver coinage operations during the period April 1918 to March 1919.

Particulars.	Amount.			Particulars.	Amount.		
	Rs.	A.	P.		R.	A.	P.
To balance . . .	10,94,873	6	4	Issues . . .	30,98,10,069	3	8
Receipts . . .	31,32,53,900	0	8	Operative Loss . .	3,15,155	0	2
				Closing Balance .	90,58,322	4	10
Refined silver of 1917-18 recovered during 1918-19.	4,245	8	0	Refined silver of 1918-19 recovered in 1919-20.	1,09,472	6	4
	31,93,53,018	15	0		31,93,53,018	15	0

The above closing balance represents the verified balance on 31st March 1919, the date on which the operative losses in the different departments were closed.

The standard tolas coined during the year amounted to 27,48·48 lakhs and the rate per lakh therefore works out to 114·7 as compared with 109·7 in 1917-18.

This rise in the rate is greatly due to the difficulties experienced during the year in carrying out the very heavy refining operations and to the unusually large accumulations of drosses which had to be operated on.

### NICKEL,

27. *Coinage*.—The two-anna cupro-nickel coin became legal tender on 1st April 1918 under Finance Department Notification No. 761-F., dated 22nd March 1918, and has been well received by the public. 77,972,000 cupro-nickel pieces valued at Rs. 97,46,500 were struck during the year.

28. *Refining Operations*.—The Nickel Refinery erected in 1917-18 and mentioned in my last year's report has been in commission throughout the year. 34,245,245 tolas of bullet envelopes were passed through the refinery during the year resulting in the release of 32,049,533 tolas for coinage purposes.

29. *Refining Losses*.—The difference between the two figures quoted above, amounting to 2,195,712 tolas, represents the gross loss in the refining operation, but this amount includes 196,889 tolas of lead recovered and delivered to the general store and subsequently used for making the lead seals referred to in paragraph 47. The net loss in refining therefore amounts to 1,998,823 tolas which works out to 5·8 tolas per hundred tolas refined.

30. *Operative Losses.*—The nickel operative loss on the year's coinage amounted to 966,677·7 tolas and is detailed below :—

Melting loss	.	.	.	.	903,558·0	tolas	@2·3 per 100
							tolas coined.
Coining loss	.	.	.	.	63,119·7	„	0·16 do.

During the year the cupro-nickel bars, resulting from the melting of bullet envelopes suddenly became very brittle and of markedly inferior quality. At first it was thought that the preliminary cleansing process from lead had been imperfectly performed, and that the deterioration of the bars was due to that material. A chemical examination however failed to detect sufficient lead to satisfy such an explanation, but brought forth the presence of an abundance of iron, and a large consignment of cupro-nickel envelopes from Kirkee Factory was found to have been mixed with steel envelopes. On further enquiry it was found that these envelopes had been received from Mesopotamia together with some Turkish ammunition.

31. As an emergency measure, cleaning by the aid of hand magnets was resorted to but, as the evil persisted and continued to increase, it became necessary to devise more efficient means of removing the steel. At the time, owing to war conditions it was not possible to obtain a sufficient supply of insulated copper wire to proceed with the construction of an electro-magnetic separator of any of the standard types. The Electric Engineer of the Mint however used the discarded armature of an old motor as an electro-magnet, and by the aid of systems of endless canvas bands conveyed the contaminated material under the magnet, and separated the steel envelopes away from the cleansed product. The machine at once replaced the services of 14 men with hand-magnets, and cleansed the material much more efficiently. The current supplied to the armature is about 40 amperes, but as the drop of voltage across the low resistance is very small, the expenditure of electric energy in this direction is trifling, and works out to 0·64 of an anna per hour.

It is anticipated that with the cleaner metal now obtained from the nickel refinery by the agency of the magnetic separator the melting loss for cupro-nickel will be more favourable in future.

## BRONZE AND COPPER.

32. *Coinage.*—This Mint coined during the year 153,603,200 pieces of bronze coins for the Government of India and foreign Governments as per appended figures, details of which will be found in Statement No. II of this report.

	No. of pieces.	Value.
(1) Bronze pice, half pice, and pie pieces for the Government of India.	147,948,800	Rs. 20,10,600
(2) Bronze pennies and half pennies for the Australian Commonwealth Government.	2,654,400	„ 1,20,450
(3) Bronze one cent pieces for the Government of the Straits Settlements.	3,000,000	„ 52,500
	<u>153,603,200</u>	<u>Rs. 21,83,550</u>

This coinage exceeded by 6,315,200 pieces the coinage of 1917-18.

33. The heavy bronze coinage, munition work, and the manufacture of Muntz metal sheets for the Controller of Ship Building rendered necessary the purchase during the year of 6,792 Mds. of copper at a cost of Rs. 4,59,316-4-3 and also of 981 Mds. of zinc and 407 Mds. of tin at a cost of Rs. 43,744-8 and Rs. 58,397-10 respectively.

34. *Operative losses.*—The operative losses on the bronze coinage executed for the Government of India amounted to 205 Mds. as per details below :—

Melting loss	194 Mds.	@ 1·16 per 100 Mds. of new coin.
Coining „	11 „	@ ·06 do. do. do.

The operative loss on the bronze coinage executed for the Australian Government amounted to 8 Mds. only as below, and is included in the charges preferred against that Government :—

Melting loss	7 Mds.	@ 1.42	per 100 Mds. of new coin.
Coining "	1 "	@ 0.23	do. do. do.

The coinage executed for the Government of the Straits Settlements was, in part of a requisition for 20,000,000 pieces of one cent coins : this will be completed during the current year.

35. The very heavy demands of the Government of India for bronze coinage brought a proposal from His Exalted Highness of the Nizam of Hyderabad to assist the Indian Mints. It was decided to accept the kind offer of His Exalted Highness and the Hyderabad Mint undertook to coin Government of India bronze pieces free of cost from metal supplied by the Calcutta Mint. In the months of August and September 1918 :—

3,600 Mds. of copper
180 Mds. of tin, and
90 Mds. of zinc

were accordingly despatched to Hyderabad for coinage.

36. *Munitions*.—The cessation of hostilities brought munition work in the Mint to a close in November 1918.

The copper operated on for munitions during the year was only 382 Mds. but to close the account 179 Mds. of copper had to be written off as loss. This figure it should be noted includes the loss on cups and rings issued during the year under review but manufactured from copper melted in the previous year.

37. Under instructions received from the Controller of Ship Building, Indian Munitions Board, 4,540 sheets of Muntz metal weighing 393 Mds. and valued at Rs. 48,600 were supplied to the Royal Indian Marine Dockyards at Calcutta and Bombay. The loss in this work was 60 Mds. or 15.3 Mds. per 100 Mds. of finished sheets. The value of the operative loss was Rs. 7,411 and was charged against the respective Dockyards. The loss was due mainly to the heavy volatilisation of the zinc during melting.

38. *Miscellaneous*.—The principal items of interest in the new medals and coins struck in this Mint during the year are :—

- The 1914 Star
- The Recruiting Badge.
- The Straits Settlements one cent piece

Nos. 3, 5 and 9 of the frontispiece. The Punch for the 1914 Star was received from Home and the necessary dies were prepared in this Mint. Requisitions were received from the Army Department for 33,000 stars and were supplied in full.

The Recruiting Badgo was struck in the Mint from designs prepared by the Head Engraver.

The coinage of one cent pieces was necessitated by the decision of the Government of the Straits Settlements to substitute a bronze coinage for their existing copper coinage. In order to distinguish the bronze from the existing copper coinage in circulation it was considered advisable to adopt a new distinctive coin, and a square coin designed by the Head Engraver of this Mint (*vide* item No. 9 of the frontispiece) was minted after receiving the Royal approval.

39. All the remaining medals illustrated in the frontispiece were designed and prepared in this Mint.

40. During the second-half of the year 1918-19 Government made an urgent demand on the Mints to accelerate rupee coinage even at the expense of the subsidiary coinage.

Accordingly the Bronze Mint was utilized for rupee coinage, and rolling cutting and stamping operations for rupees were carried out in that portion of the Mint simultaneously with work in the Silver Mint.

It was also decided to work the Bronze Mint with day and night shifts double shifts having already been employed with success in the Melting Department.

41. Later on it was found that the Silver Automatic Weighing Department, as constituted, could not even when working day and night shifts, cope with the work on account of the lack of automatic balances, and as new automatic balances were unprocurable from Home except at an excessive price, the Mint was in some difficulty for a short period.



42. Ultimately a semi-automatic balance was designed by the Assistant Mint Master, Mr. Hart, which when manufactured by Messrs. Wilson & Co. of Calcutta, proved successful, and some 30 of these balances were rapidly built and placed in commission.

By means of these balances rupees can be tested at the rate of approximately 1,100 per hour.

43. Steps are now being taken to construct standard pattern automatic balances locally.

44. *Lead Seals.*—The balance of the stock of these seals, which were obtained from England before the war, and of which this Mint uses 800 daily, became exhausted during the year and could not be replenished.

For a short time sealing wax was employed, but the wax seals proved unsatisfactory as the Mint could not obtain good sealing wax locally at reasonable rates.

A mould for manufacturing lead seals designed by the Assistant Mint Master, was made in the Mint workshop and proved very economical and satisfactory, and in future, indents for lead seals from England should be unnecessary.

The lead used for the seals is that extracted in the Nickel Refinery from cupro-nickel bullet envelopes.

45. *Plant and Machinery.*—The additions and alterations to plant and machinery during the year were fairly numerous. The total value of the machinery transferred to the Capital Account under "Plant" was Rs. 33,157, the principal items being a "Garvin Milling Machine" and a "Screwing and Tapping Machine" valued at Rs. 5,520 and Rs. 3,176 respectively.

46. The quadrennial repairs to the Mint buildings were carried out during the year by the Public Works Department at a cost of about Rs. 10,974 for the Silver Mint and about Rs. 8,356 for the Bronze Mint.

47. The following figures show the cost of working the Power Station during the year under review :—

B. T. units generated	1,453,185
Fuel, Establishment and Stores	Rs. 79,123 0 0
Depreciation @ 5 per cent on plant and 3 per cent on building and provisions for pensions, etc.	Rs. 25,587 0 0
	1,04,710 0 0
The cost per unit works out to 1 anna 2 pies as detailed below :—	
Fuel, Establishment and Stores	10.44 pies.
Depreciation, Interest and Pensions	3.38 "
Total cost per unit	13.82 "
	or 1 anna 2 pies.

48. It was found necessary during the year to obtain auxiliary electric power and sanction was obtained from Government to connect the motors in the Bronze Mint with the mains of the Calcutta Electric Supply Corporation, Limited. The cost of cables, service mains, and switchboard for this work was Rs. 5,413 and during the months October 1918 to March 1919 the Mint consumed 177,136 units at a cost of Rs. 14,358 or an average charge of Re. 0-1-4 per unit.

#### REVENUE AND EXPENDITURE.

49. *Charges Levied.*—The seigniorage on silver purchased for coinage amounted to Rs. 55,86,398. The revenue under this head of account was further augmented by Rs. 10,328 being the value of assays realised through the Assay Office. There were also premelting fees amounting to Rs. 204.

50. *Gain on recoinage.*—The assay benefit representing the difference between the fineness of silver as invoiced and its fineness when taken into operation amounted to Rs. 38,570.

51. *Cash and Transfer receipts.*—The receipts amounted to Rs. 50,885 as compared with Rs. 1,83,786 in the previous year. The decrease under this head is due to the fact that during the year the receipts in respect of charges for Colonial coinages amounted to Rs. 1,821 only.

52. *Operative Losses.*—These items are dealt with in para. 28 of this report. It should be noted however that the operative loss shown in the "Revenue and Expenditure Statement" excludes the gain or loss by overstandard weight and fineness of the new coins coined, which appears in the same statement as a separate item of account.

Under this head of account, but shown as a separate item, will be found an amount of Rs. 1,325 which represents the loss in refining American dollar silver which was brought to account during the year under review. It does not represent the total loss incurred during the year in refining as the balance of this loss amounting to Rs. 2,80,407 will appear in the "Revenue and Expenditure Statement" for the year 1919-20.

The net loss by understandard value of uncurrent coin withdrawn from circulation amounts to Rs. 53 as compared with a gain of Rs. 2,071 under the corresponding head last year.

53. *Loss on Recoinage*.—The loss under this head of account amounts to Rs. 95,647 against Rs. 1,83,645 in the previous year. The decrease is due to the gradual decline in the receipts of uncurrent coin.

54. *Copper used as Alloy*.—The value of copper used for alloying silver to the standard of fineness necessary for coinage amounted to Rs. 79,194 as compared with Rs. 80,269 in the previous year.

55. *Copper and other Metals used for Contingent purposes*.—The expenditure amounted to Rs. 11,160 as compared with Rs. 5,444 in the previous year.

56. *Salaries and Establishment*.—The expenditure under this head of account was Rs. 7,81,131 as compared with Rs. 4,39,016 in the previous year. The increased expenditure is due to continuous overtime, including the maintenance of an establishment for night shifts.

57. *English and Local Stores*.—The total expenditure amounted to Rs. 8,25,939 against Rs. 3,78,223 in the previous year. The increase is principally due to unusually large purchases of local stores at war prices.

The annual verification of Europe Store balances was carried out during the months of September to December 1918. The surpluses and deficiencies were investigated and adjusted in the accounts for the year under review.

58. *Contingent and Transfer Charges*.—These amounted to Rs. 2,99,586 as compared with Rs. 69,766 in the previous year. The increase is principally due to extra freight and transfer charges.

59. *Pro formâ Receipts and Charges*.—The Receipts amounted to Rs. 7,44,637 and represented a credit (similar to the seigniorage on new rupee coinage) of Rs. 3,79,144 for bronze coins manufactured, and a credit of Rs. 3,65,494 for nickel coins manufactured at rates laid down in letter No.  $\frac{\text{Cy.-2887}}{308-18}$ , dated 7th December 1918, from the Controller of Currency, Calcutta. The charges amounted to Rs. 3,31,247 and includes Rs. 2,99,985, the interest at  $3\frac{1}{2}$  per cent. on the bullion store balance and Capital Account.

60. *Balances sunk in the Mint*.—The daily average balance, excluding silver held on behalf of the Currency Department, amounted to Rs. 3,75,288. The balances reached a maximum of Rs. 11,00,196 on 14th February 1919 after being Nil on 17th August 1918.

61. *Counterfeit Coins*.—Counterfeit coins eliminated during the year from remittances of uncurrent silver coins received from treasuries were as follows:—

Rs. 889,  $\frac{1}{2}$  Rs. 37,  $\frac{1}{4}$  Rs. 173,  $\frac{1}{4}$  Rs. 223.

The receipts of counterfeit coins for disposal from treasuries and other offices will be found in Statement No. IV. They were generally of poor execution.

62. *Offences against coinage*.—Offences against coinage are detailed in Statement No. V. 316 cases were brought to trial during the calendar year 1918 against 363 in 1917, and the ratio between the number of accused brought to trial and convicted was 61·8 against 65·7 in 1917.

#### GENERAL.

63. *Visitors*.—Their Excellencies The Viceroy and Lady Chelmsford attended by the Viceregal staff paid a private visit to the Mint on 14th December 1918, and a large party from the Mining and Geological Institute of India visited the Mint on the 31st January 1919.

## Account of the total Revenue and Expenditure of the Calcutta Mint during the year 1918-1919.

	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.
<b>Revenue.</b>									
To CHARGES LEVIED :—									
SILVER.									
Percentage on new rupee coinage . . .	55,86,397	15	3						
Seigniorage on Dollar coinage . . .	...								
Do. Subsidiary coinage for Colonial Governments . . .	...								
Premelting fees . . .	203	8	0						
Assay and melting fees (Private) . . .	10,327	8	0						
				55,96,928	15	3			
GOLD.									
On Bullion from Government Departments .	...								
To GAIN ON COINAGE OPERATIONS :—									
SILVER.									
Gain by Assay benefit . . .	38,569	9	0						
Gain by understandard weight and fineness of new coins issued . . .	...								
Gain by overstandard value of uncurrent Silver coins withdrawn from circulation .	...								
Other items . . .	...								
				38,569	9	0			
By WORKING EXPENSES :—									
SILVER.									
Operative losses . . .	4,38,816	14	6						
Loss in refining operation . . .	1,324	9	5						
Loss by overstandard weight and fineness of new coins issued . . .	35,555	14	11						
Loss by understandard value of uncurrent Silver coins withdrawn from circulation .	53	4	8						
Loss on withdrawal of uncurrent Silver Coins . . .	95,647	5	1						
				5,71,398	0	7			
GOLD.									
Loss in melting . . .	...								
Other items . . .	...								
By MISCELLANEOUS CHARGES :—									
PYX coins to Royal Mint . . .	237	1	2						
Other items . . .	786	14	4						
By COPPER, BRONZE AND NICKEL :—									
Used as alloy . . .	79,194	5	3						
Used for contingent purposes . . .	11,160	4	3						
				1,023	15	6			
				90,354	9	6			

## GOLD.

Miscellaneous

For scales, weights and other articles supplied and work done for private individuals  
 For old Stores, etc., sold  
 Rents recovered from residential quarters  
 Cost of Electric current consumed  
 Miscellaneous

...

## TO CASH RECEIPTS :—

For scales, weights and other articles supplied and work done for private individuals  
 For old Stores, etc., sold  
 Rents recovered from residential quarters  
 Cost of Electric current consumed  
 Miscellaneous

3,659 1 7  
 6,595 1 6  
 600 0 0  
 1,464 12 0  
 9,613 6 6

21,932 5 7

Carried over

56,57,480 13 10

## BY SALARIES AND ESTABLISHMENT :—

Fixed Establishment  
 Compensation in lieu of private assay fees  
 Extra Establishment and overtime pay

1,89,961. 7 11  
 1,349 12 9  
 5,89,819 4 10

7,81,130 9 6

## BY LOCAL STORES :—

Coke, Coal, Charcoal, etc..  
 Liquid fuel  
 Oil, Grease and Tallow  
 Acids  
 Iron, Brassmongery, etc..  
 Metals  
 Wood for Boxes  
 Bullion Trucks, Moulds, etc..  
 Electrical Stores  
 Miscellaneous

1,50,351 8 7  
 1,343 0 0  
 49,402 9 0  
 32,388 10 9  
 3,086 7 3  
 20,581 12 0  
 35,617 7 0  
 ...  
 17,667 8 1  
 1,19,459 9 11

4,29,848 8 7

## BY ENGLISH STORES :—

Value of Stores used  
 Other or Miscellaneous issues  
 Less 1/5 freight charged as below

3,95,004 15 9  
 1,085 11 3  
 ...

3,96,090 11 0

Carried over

22,69,846 6 8



To <i>pro forma</i> Receipts:— Percentage on value of Bronze Coins manu- factured . . . . . Percentage on value of Nickel Coins manu- factured . . . . . Medals for Royal Army Temperance Associa- tion . . . . . Weights supplied to Treasuries . . . . .	TOTAL	...	56,86,383 1 2	By P. W. D. CHARGES:— Repairs and Alterations to Buildings . . . . .	52,532 0 0	
	To Balance	...	...	By MISCELLANEOUS CHARGES EXTERNAL TO MINT:— Stationery . . . . . Printing . . . . .	7,168 12 0 2,215 0 0	61,915 12 0
	TOTAL	...	56,86,383 1 2		...	26,31,348 2 6
	Total Brought down	..	56,86,383 1 2	TOTAL	...	30,55,034 14 8
To <i>pro forma</i> Receipts:— Percentage on value of Bronze Coins manu- factured . . . . . Percentage on value of Nickel Coins manu- factured . . . . . Medals for Royal Army Temperance Associa- tion . . . . . Weights supplied to Treasuries . . . . .	To Balance	...	...	By Balance	...	56,86,383 1 2
	TOTAL	...	...	TOTAL	...	26,31,348 2 6
	Total Brought down	..	...	Total Brought down	...	31,262 0 0
	To Balance	...	...	By <i>pro forma</i> Charges:— 1/6 of salaries of superior servants . . . . . 1/16 of salaries of inferior servants . . . . . Interest on— Capital account valued at . . . . . Average Silver balance . . . . . " Bronze " . . . . . " Nickel " . . . . . Europe Store . . . . . @ 3½ per cent. on . . . . .	31,023 0 0 239 0 0 63,98,761 0 0 3,75,288 0 0 14,96,034 0 0 46,199 0 0 2,54,716 0 0 85,70,998 0 0	29,62,595 2 6 34,68,425 5 11 64,31,020 8 5
To <i>pro forma</i> Receipts:— Percentage on value of Bronze Coins manu- factured . . . . . Percentage on value of Nickel Coins manu- factured . . . . . Medals for Royal Army Temperance Associa- tion . . . . . Weights supplied to Treasuries . . . . .	TOTAL	...	56,86,383 1 2	By Balance	...	29,62,595 2 6
	To Balance	...	...	TOTAL	...	34,68,425 5 11
	TOTAL	...	56,86,383 1 2	By Balance	...	64,31,020 8 5
	Total Brought down	..	56,86,383 1 2	GRAND TOTAL	...	64,31,020 8 5

## Abstract of Capital Account of the Calcutta Mint to the end of the year 1918-1919.

	Land.	Building.	Plant.	TOTAL.		Land.	Building.	Plant.	TOTAL.
	Rs.	Rs.	Rs.	Rs.		Rs.	Rs.	Rs.	Rs.
Total Expenditure on Capital Account brought forward from last year	25,86,896	20,30,922	18,02,831	64,20,649	Value of Stores lost or destroyed . . .	...	..	230	230
Expenditure during the year 1918-19 by Public Works Department	...	65,327	..	65,327	Value of Buildings demolished . . .	...	..	...	...
Other Items . . .	30,915	...	33,157	64,072	Depreciation at 5 per cent. on Plant and 3 per cent. on Buildings . .	...	60,927	90,130	1,51,057
						...	60,927	90,360	1,51,287
					Balances .	26,17,811	20,35,322	17,45,628	63,98,761
TOTAL Rs.	26,17,811	20,96,249	18,35,988	65,50,048	TOTAL Rs.	26,17,811	20,96,249	18,35,988	65,50,048

## No. II.

## Statement of the coinage of the Calcutta Mint for the year 1918-1919.

	Tale of pieces.	Nominal value.			TOTAL.			REMARKS.
					Tale.	Value.		
						Rs.	A.	
SILVER—								
Rupees . . . . .	260,400,000	26,04,00,000	...	...	314,420,849	27,47,66,650	8	...
Half rupees . . . . .	8,445,753	17,22,876	8	...				
Quarter rupees . . . . .	50,575,096	126,43,774	...	...				
British Dollars . . . . .	...	...	...	...				
NICKEL—								
Two anna . . . . .	77,972,000	97,46,500	...	...	77,972,000	97,46,500	..	...
One anna . . . . .		...	...	...				
BRONZE—								
Single pice . . . . .	117,472,000	18,35,500	...	...	153,603,200	21,83,550	..	...
Half pice . . . . .	6,284,800	49,100	...	...				
Pie pieces . . . . .	24,192,000	1,26,000	...	...				
Penny pieces for Australian Government . . . . .	1,200,000	75,000	...	...				
Half penny do. . . . .	1,454,400	45,450	...	...				
Ceylon quarter cents . . . . .	...	...	...	...				
Straits cents . . . . .	3,000,000	52,500	...	...				
Straits half cents . . . . .	...	...	...	...				
Straits quarter cents . . . . .		...	...	...				
GRAND TOTAL . . . . .								



## III.

## Statement showing the Cost of Miscellaneous Work done in the Calcutta Mint during the year 1918-1919.

Description.	Amount.	Total.		REMARKS.
	Rs.   A.   P.	Rs.   A.   P.		
RECEIPTS.				
Receipts for Medals, Seals, Stamps, etc. .	1,27,437   11   5			
Adjusting Weights . . . .	3,188   4   0			
Sale-proceeds of Treasure Trove coins .	...			
Miscellaneous . . . .	2,49,422   9   1	3,80,048   8   6		
EXPENDITURE.				
Engraver's Labour . . . .	11,944   14   1			
Workshop do. . . .	27,866   14   8			
Jeweller's do. . . .	13,711   12   0			
Stores used (including gold, silver and copper).	2,83,983   5   5	3,37,506   14   2		
Net Profit Rupees .		42,541   10   4		

## No. IV.

Statement of Counterfeit Coins received at the Calcutta Mint showing also those cut and broken at the Treasuries, compiled from the Quarterly Returns furnished by Treasury Officers during the year 1918-19.

Names of Provinces.	Nominal value of remittances of uncurrent coins received at the Mint in thousands of Rupees.	COUNTERFEITS RECEIVED AT THE MINT.												Counterfeit Coins cut at the several Indian Treasuries as per Quarterly Returns furnished by the Treasury Officers and Railway Administrations under Art. 591, C. A. Code, and Government Resolution No. A-6192, dated 10th December 1901.	REMARKS.		
		In remittances of uncurrent coins from Treasuries.				From Treasury and other Officers under Art. 581, C. A. Code, and Government Resolution No. 1004-A., dated 21st February 1901.				Received at the Mint for examination.							
		R	½	¼	1/16	R	½	¼	1/16	R	½	¼	1/16	R	½	¼	1/16
India . . . . .	1,040.1	65	5	29	50	...	...	...	...	36	...	...	...	831	5	21	13
Central Provinces . . . . .	16.7	2	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...
Central India . . . . .	...	...	...	...	...	16	...	...	...	32	...	...	16	...	...	...	...
Burma . . . . .	149.9	51	1	16	12	589	82	185	41	...	...	...	...	2,429	83	269	89
Bengal . . . . .	542.2	146	4	31	22	399	17	118	80	504	7	132	182	8,445	245	230	152
Bihar and Orissa . . . . .	670.3	311	4	41	32	1	...	...	...	14	2	3	1	2,446	29	15	42
Assam . . . . .	78.3	30	...	1	...	50	4	5	...	49	4	3	3	191	2	4	1
United Provinces . . . . .	1,527.2	284	23	53	107	21	...	...	1	5	...	...	...	2,874	24	47	59
Punjab . . . . .	...	...	...	...	...	...	...	...	...	30	...	...	7	773	17	7	5
Madras . . . . .	...	...	...	...	...	...	...	...	...	6	...	...	2	...	...	...	...
State Railways . . . . .	...	...	...	...	...	...	...	...	...	13	2	2	...	12,462	1,622	2,385	2,180
Rajputana Agency . . . . .	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
TOTAL . . . . .	4,024.7	869	37	173	223	1,076	103	309	122	600	15	140	211	30,451	2,027	2,909	2,541







# REPORT ON THE WORKING OF HIS MAJESTY'S ASSAY OFFICE, CALCUTTA.

No. 18, dated Calcutta, the 10th May 1919.

From—Major H. B. DRAKE, I.M.S., Officiating Assay Master, Calcutta,

To—The Controller of Currency.

I have the honour to submit the following report on the working of the Assay Department, Calcutta, for the official year 1918-19.

2. The appended statement gives the number of assays made during the year:—

Description.	1918-19.		1917-18	
	Number.	Total.	Number.	Total.
<b>GOLD.</b>				
Assays on gold from all sources . . . . .	2,139		2,368	
Check assays . . . . .	190	2,329	275	2,643
<b>SILVER.</b>				
Assays on silver alligated for standard coinage— for Rupees . 36,791	41,615	...	15,854	...
„ ½ Rupees . 723				
„ ¼ Rupees . 4,101				
„ ⅛ Rupees . Nil				
Assays on silver alligated for— Ceylon 50 Cents . Nil	Nil	...	161	...
„ 25 Cents . Nil				
„ 10 Cents . Nil				
Do. pyx coins . . . . .	28,023		12,134	
Do. miscellaneous . . . . .	4,629		3,336	
Check assays . . . . .	1,184	70,451	1,020	32,505
<b>BRONZE.</b>				
Assays on bronze meltings for coinage . . . . .	36		18	
Do. pyx coins . . . . .	72	108	72	90
<b>CUPRO-NICKEL.</b>				
Assays on cupro-nickel meltings for coinage . . . . .	67		21	
Do. pyx coins . . . . .	76	143	22	43
<b>MISCELLANEOUS.</b>				
Parting assays . . . . .	52		57	
Assays on various metals and ores . . . . .	234		644	
Do. Mint drosses . . . . .	114	400	111	812
Total for the year . . . . .	...	78,431	...	36,098

3. *Gold assays.*—The total number of gold assays from all sources during the year amounted to 2,329, of which 101 were done for the Mint.

4. *Average fineness per mille of Silver meltings for coinage :—*

	Rupees.	½ Rupees.	¼ Rupees.	⅓ Rupees.	Ceylon 50 Cents.	Ceylon 25 Cents.	Ceylon 10 Cents.
Average for the year 1918-19.	916.124	916.076	915.699	...	...	...	...
Average for the year 1917-18.	916.141	...	915.796	915.718	798.944	798.720	798.240

5. *Gold in Silver coinage.*—The average proportion of gold found by monthly parting assays in the silver pyx coins was :—

	Per mille.
For Rupees . . . . .	0.058
„ ½ Rupees . . . . .	0.082
„ ¼ Rupees . . . . .	0.085

The coinage of the year was computed to contain 6,104 troy ounces of gold in value about £25,930.

6. *Pyx trials of Silver coins.*—The following tables give the details of the pyx trials of silver coins for *weight* and *fineness* :—

*Trials for weight.*

Description of coins.	Number of trials.	Total number of coins weighed.	Average weight in grains.	Number of coins above the legal remedy for weight.	Number of coins below the legal remedy for weight.
Rupees . . . . .	2,630	26,300	180.031	16	10
Half-rupees . . . . .	19	190	89.981	<i>Nil</i>	<i>Nil</i>
Quarter-rupees . . . . .	144	1,440	45.026	69	55

*Trials for fineness.*

Description of coins.	Number of trials.	TOTAL NUMBER OF COINS ASSAYED.		AVERAGE FINENESS PER MILLE OF COINS ASSAYED.		Number of coins above the legal remedy for fineness.	Number of coins below the legal remedy for fineness.
		Singly.	In groups after melting.	Singly.	In groups after melting.		
Rupees . . . . .	2,610	13,797	64,478	916.531	916.753	<i>Nil</i>	1
Half-rupees . . . . .	19	135	435	916.579	916.889	<i>Nil</i>	<i>Nil</i>
Quarter-rupees . . . . .	144	942	12,018	916.443	916.597	<i>Nil</i>	<i>Nil</i>

7. *Bronze meltings and pyx coins.*

Description.	Copper per cent.	Tin per cent.	Zinc per cent.
Average fineness of bronze meltings for 1918-19 .	94.733	4.183	0.748
Do. do. 1917-18 .	94.897	4.210	0.810
Do. pyx coins for 1918-19 .	94.930	4.154	0.892
Do. do. 1917-18 .	94.945	4.175	0.882

8. *Cupro-nickel meltings and pyx coins.*

Description.	Copper per cent.	Nickel per cent.	Lead per cent.
Assay fineness of—			
Cupro-nickel meltings for 1918-19 . . .	76.684	22.578	0.300
Do. do. 1917-18 . . .	76.159	23.583	0.363
Do. pyx coins for 1918-19 . . .	76.840	22.267	0.328
Do. do. 1917-18 . . .	76.257	23.133	0.413

9. *Miscellaneous assays.*—Of the 234 assays under the head “Assays on various metals and ores,” 169 assays were made on counterfeit and suspected coins, etc., 56 assays on metals and 9 assays on ores.

10. Verification of weight pieces.—There was no verification of weights made during the year owing to abnormal pressure of work.

11. The post of Assay Master was held by Lieutenant-Colonel J. J. Bourke, I.M.S., from the beginning of the year till 1st August 1918; by Dr. W. A. K. Christie from 2nd August 1918 till 6th February 1919, and by Major H. B. Drake, I.M.S., from 7th February 1919 till the end of the year.

The post of Deputy Assay Master was held by Lieutenant-Colonel J. J. Bourke, I.M.S., in addition to his own duties of Assay Master, from 1st to 11th April 1918, and by Dr. W. A. K. Christie from 12th April 1918 to 1st August 1918, and from 7th February 1919 till the end of the year.

For the intervening period, *i.e.*, from 2nd August 1918 to 6th February 1919 Mr. G. O. L. Durham, Head Assistant, was in charge of the duties of the Deputy Assay Master.





## REPORT ON THE WORKING OF THE BOMBAY MINT.

No. 808, dated Bombay, the 31st May 1919.

From—Major G. H. WILLIS, C.I.E., M.V.O., R.E., the Master of the Mint, Bombay,

To—The Controller of Currency, Calcutta.

I have the honour to submit the annual report on the operations of the Bombay Mint together with the prescribed statements for the financial year 1918-19,

### GOLD.

#### 2. Receipts :—

(a) Under the Gold (Import) Ordinance III of 1917, which was re-enacted as the Gold (Import) Act, No. XXII of 1917, all gold coin and bullion imported into British India was acquired by Government. The particulars of receipts into this Mint are set forth in the table below :—

#### *Acquired Gold.*

Classification.	Value in Rupees.
Sovereigns of current weight . . . . .	48,810
Half Sovereigns of current weight . . . . .	203
Sovereigns of short weight or not more than 3 grains less than the standard weight (nominal value) . . . . .	6,555
Half Sovereigns of short weight or not more than 3 grains less than the standard weight (nominal value) . . . . .	765
Sovereigns of reduced weight or more than 3 grains less than the standard weight (bullion value) . . . . .	55
Half Sovereigns of reduced weight or more than 3 grains less than the standard weight (bullion value) . . . . .	21
*Difference between the face value and value calculated at 7.58344 grains troy pure Gold per Rupee of Sovereigns of short weight or not more than 3 grains less than the standard weight . . . . .	899
*Difference between the face value and value calculated at 7.53344 grains troy pure Gold per Rupee of Half Sovereigns of short weight or not more than 3 grains less than the standard weight . . . . .	78
Other Foreign Gold Coins . . . . .	247
Bazar Gold Bullion and Miscellaneous . . . . .	5,146
<b>TOTAL . . . . .</b>	<b>62,779</b>

\* Adjusted under the Controller of Currency's endorsement No. B. & R. 897 (a)  
56—18, dated the 23rd May 1918.

*Other Receipts.*

Classification.	Value in Rupees.
Sovereigns of short weight or not more than 3 grains less than the standard weight (nominal value)	120
Half Sovereigns of short weight or not more than 3 grains less than the standard weight (nominal value)	270
Sovereigns of reduced weight or more than 3 grains less than the standard weight (Bullion value)	29
Half Sovereigns of reduced weight or more than 3 grains less than the standard weight (Bullion value)	7
Bazar Gold Bullion and Miscellaneous	143
<b>TOTAL</b>	<b>569</b>

- (b) Seven consignments of Gold Bullion and Coin received from the Calcutta Mint amounting to Rs. 6,63,20,639.
- (c) In addition to the above receipts the Mint received for safe custody on behalf of the Bank of England the usual fortnightly consignments from the Indian Mines.
- (d) Currency Gold of the value of Rs. 5,32,94,147 was shipped during the year. The Mint shipped on behalf of the Bank of England African Gold to the value of £1,671,658.
- (e) Gold Bullion to the value of Rs. 65,11,697 was issued to Native States in exchange for Rupees.
- (f) The amount of the gold held at the end of the year at the Mint on behalf of the Currency amounted to Rs. 10,18,18,709 in bullion and coin and in Sovereigns and half Sovereigns to Rs. 82,48,312.

3. *Gold coinage :—*

- (a) 2,109,703 Gold Mohur pieces of the nominal value of Rs. 3,16,45,545 were coined during the year, of which 1,000,700 pieces were issued to Treasuries and Currency offices.
- (b) 1,295,372 British Sovereigns were coined by the Bombay branch of the Royal Mint from the blanks supplied by the Bombay Mint.
- (c) The loss of gold due to the operation of the Mint after allowing for the adjustments of gains and losses was 1,415.01 tolas fine. This gives a rate of loss of 66.18 tolas per lakh of fine tolas coined.

**SILVER.**4. *Receipts :—*The silver receipts comprised :—

- (a) Bar silver, Dollar Bars, Sycee Silver, Straits and Maria Theresa Dollars and Halli Sicca Rupees purchased for Rupee as well as Egyptian and Straits Government coinages amounting to 24,11,97,485 standard tolas and invoiced at Rs. 25,74,09,068. Details of these receipts are given below.

Description.	Invoice value.	Standard tolas.
Bar silver . . . . .	7,04,08,563	6,79,63,231
Dollar Bars . . . . .	18,05,14,407	16,68,15,591
Sycee Silver . . . . .	1,99,692	1,81,721
Straits Dollars . . . . .	41,51,462	41,01,998
Maria Theresa Dollars . . . . .	370	370
Halli Sicca Rupees . . . . .	21,34,574	21,34,574
	<b>25,74,09,068</b>	<b>*24,11,97,485</b>

\* Excluding Silver transferred to the Calcutta Mint.

They were received as follows :—

	Invoice value.	Standard tolas.
Purchased by the Secretary of State . . . . .	24,75,11,044	23,14,76,010
Purchased locally . . . . .	98,98,024	97,21,475
	25,74,09,068	24,11,97,485

(b) Withdrawn and uncurrent silver coins received for recoinage of the nominal value of Rs. 15,19,019 classified as under :—

Classification.	Value in Rupees.
Government rupees and half-rupees of 1835 . . . . .	37,955
Do. do. 1840 (1st issue) . . . . .	1,22,571
Government rupees and half-rupees of 1840 (2nd issue) . . . . .	4,57,798
Government shroff marked, defective and dumb coins . . . . .	2,57,069
Government worn coins . . . . .	6,31,834
„ Reduced coins . . . . .	5,553
„ George V Rs. 1911 . . . . .	3,838
Fraudulently defaced coins from Railways . . . . .	1,570
Confiscated Coins . . . . .	34
Foreign Coins . . . . .	7
Burnt Coins . . . . .	790
	15,19,019

The corrected outturn value of these coins amounted to 14,83,268 standard tolas after deduction of loss by wear and minor corrections :—

(c) A consignment of Chandori rupees offered by His Highness the Maharaja of Gwalior to the Government of India amounting to 72,198 standard tolas.

(d) Consignments of Straits Dollars of the outturn value of 1,38,84,910 standard tolas from the Straits Government towards silver coinage undertaken for that Government.

#### 5. Silver Coinage—

(a) The Government coinage carried out during the year consisted of rupees and half-rupees, amounting to 250,930,993 pieces. Rs. 21,45,313 were paid to the Reserve Treasury and Rs. 24,36,22,995 to the Paper Currency Department, Bombay, representing a silver content of 24,57,19,317 standard tolas.

(b) The coinage for the Egyptian Government consisted of 10, 5 and 2 Piastres. Up to 31st March 1919, 1,870,044 pieces were minted and 1,870,000 pieces of a silver content of 5,45,708 standard tolas were shipped to Egypt.

(c) The Straits Government coinage consisted of 10 and 5 Cents, 400 fine. 11,911,213 pieces were minted within the twelve months. 9,800,000 ten cents and 3,200,000 five cents of 400 fineness of a silver content of 11,48,958 standard tolas were shipped to Singapore.

(d) The whole of the coinage examined by the Assay Master during the year was found to be within legal remedy for weight and fineness except in the one case reported to the Controller of Currency, Calcutta, in this office letter No. 1978, dated the 9th August 1918.

6. *Percentage of Good Coin.*—The percentages of good coin calculated on the amounts rolled were as follows :—

Denomination of coin.	Tolas of ingots rolled.	Percentage of good coin.
British Sovereigns . . . . .	17,74,311	50.17
Gold Mohurs . . . . .	24,46,100	59.05
Rupees . . . . .	35,70,38,491	67.39
Half-rupees . . . . .	80,91,693	63.80
10 Cents . . . . .	39,07,525	53.57
5 „ . . . . .	9,79,448	38.39
10 Piastres . . . . .	3,34,368	32.31
5 „ . . . . .	2,71,338	42.84
2 „ . . . . .	11,42,642	37.60

7. *Silver Operative Losses.*—The silver operative losses are given in the following table:—

	Standard tolas.		Standard tolas.
Opening Balance . . . .	40,59,070·28	Issues . . . . .	*24,74,23,712·59
Receipts . . . . .	25,66,37,861·50	Closing Balance . . . .	1,29,52,376·73
Refined silver of 1917-18 recovered in 1918-19.	16,653·00	Refined silver of 1918-19 recovered in 1919-20.	75,747·00
		Operative losses . . . .	2,61,748·41
	<hr/> 26,07,13,584·73 <hr/>		<hr/> 26,07,13,584·73 <hr/>

\* This item includes in addition to the issues detailed in paragraph 5 above an item of 9,729·59 standard tolas, small miscellaneous issues.

This gives a rate of loss of 105·79 tolas per lakh of standard tolas issued or a loss of 105·79 per cent.

The increased rate of loss over that for 1917-18 is due to the different classes of silver received. In the year under report the fineness on which the silver was invoiced was nearer the true value than in the previous year when the receipts included large quantities of Sycee and Mexican Dollars.

### NICKEL.

8. 8,018,658 nickel two anna pieces of the value of Rs. 10,02,332 were coined. Rs. 10,36,000 worth were remitted to the Reserve Treasury. The number of nickel one anna pieces coined was 80,692,469 of the value of Rs. 50,43,279. Rs. 60,09,500 worth were taken over by the Reserve Treasury. 872,069 Five Millieme pieces were also minted and issued to the Egyptian Government. The total operative loss written off during the year amounted to 63 $\frac{3}{4}$  maunds, giving a percentage of 65 per 100 maunds of metal coined.

### MISCELLANEOUS.

9. *War Work.*—There was a small manufacture of copper driving bands for shells, and a few repairs and some miscellaneous work for Military Departments and the Red Cross.

10. *Gold and Silver Work.*—The melting fees on gold tendered for assay amounted to Rs. 11,582 against Rs. 20,822 in the preceding year. On silver the amount was Rs. 10,433 against Rs. 102.

11. *Miscellaneous Work.*—This included the usual supply of dies, medals, etc., the manufacture and adjustment of scales and weights and miscellaneous supplies and repairs undertaken for Government Departments and the Public, the profit made being Rs. 32,432.

12. *Treasure Trove Coins.*—During the year 14,364 gold and 23 silver Treasure Trove coins were received. Coins of the metal value of Rs. 765 were sold during the year.

13. *Mint Working Standards.*—The weights in all the departments were periodically compared with the standards and any differences found carefully adjusted.

14. *Visitors.*—The Mint was open to the public twice a week throughout the year.

15. *Analysis of Revenue and Expenditure.*—Owing to the rupee and nickel coinage being the largest on record the credit for "Percentages on coins manufactured" shows a large increase. For the same reason the expenditure under Establishment charges and local and English Stores was greater than previous years. The expenditure incurred during the year on the building of a branch of the Royal Mint for the coinage of sovereigns is not included in Statement I.

16. *Résumé of Revenue and Expenditure.*—The results of the transactions of the year as summarised in Statement I shows a gain of Rs. 35,16,794 on the year's operations.

17. *Balances sunk in the Mint.*—The balance of silver bullion belonging to Government valued at one rupee per tola of standard fineness, stood at the beginning of the year at Rs. 1,78,273. There was no balance on the 31st March 1919. The average daily balance was Rs. 1,30,286. The maximum daily balance was Rs. 5,38,855.

#### OFFENCES AGAINST THE COINAGE.

18. *Return of Counterfeit coins.*—The usual return of counterfeit coins is appended to this report :—

- (a) 690 Counterfeit coins (426 rupees, 31 half rupees, 55 quarters, and 178 one eighths) were received for examination during the year as against 1,716 in 1917-18. 14 of these were struck coins and the remainder castings. One very well executed counterfeit rupee from the Rajputana-Malwa Railway was accepted ; and the rest were cut and returned to the tenderers including Railways, as they were mainly of inferior workmanship or composition.
- (b) 259 Counterfeit coins (164 Rupees, 9 half rupees, 33 quarters, and 53 one eighths) were discovered in remittances of uncurrent coins to the Mint as against 992 in the previous year.
- (c) During the year under report 18,459 Counterfeit coins were cut at the Treasuries and Railways, as against 37,348 in 1917-18.
- (d) 128 one anna and 8 two anna nickel pieces received during the year were found to be palpable cast counterfeits of lead and tin or other similar alloys.

#### GENERAL.

The work of the Mint throughout the year was very heavy. In addition to record silver and nickel coinages a gold coinage was inaugurated.

The supervising staff, European and Indian, responded loyally throughout and are worthy of great commendation.

Unfortunately the harmony of the year was marred by a strike which spread over several weeks towards the end of the financial year. I venture to ascribe this strike more to work weariness than to more obvious causes such as the increase of prices and outside influence which was undoubtedly brought to bear. The operatives had been receiving large wages for continuous overtime work and were financially able to afford a time of idleness, so they came into line with those around them and termed the holiday which they were determined to have (and truth to tell had well earned) a strike. No damage was done by the strikers and they finally returned to work unconditionally.

Towards the end of the financial year recourse was had to two shift working, the Mint running in most departments for twenty hours daily. The shifts were from 8-30 A.M. to 6-30 P.M. and from 8-30 P.M. to 6-30 A.M. This increased the outturn but, as was to be expected, not altogether proportionately to the hours worked. The chief difficulty found was the provision of sufficient satisfactory supervision.

The old and in some cases extremely antiquated steam engines of the Mint gave trouble throughout the year and the question of their replacement by modern plant as soon as work slackens and firm quotations as regards price and time of delivery are obtainable, becomes increasingly important.

# No. I.

## Account of the total Revenue and Expenditure of the Bombay Mint during the year 1918-1919.

Revenue.			Expenditure.		
To CHARGES LEVIED :—			By WORKING EXPENSES :—		
Rs.	A.	P.	Rs.	A.	P.
Percentage on new rupee coinage . . .	48,15,905	15 0	Operative losses in gold Mohur and sovereign coinages . . .	33,809	8 7
" 15 " gold coinage . . .	31,645	8 8	Operative losses brought to account,—silver . . .	3,30,384	14 6
" Sovereign coinage . . .	12,953	11 6	Loss by overstandard weight and fineness of new coins issued . . .	...	
Seigniorage on Dollar coinage . . .	...		Loss by understandard value of uncurrent Silver Coins withdrawn from circulation . . .	...	
Do. and other charges on Subsidiary coinage for Straits and Egyptian Governments . . .	1,32,228	3 0	Other items . . .	3,366	0 0
Premelting fees . . .	110	6 0	Loss on withdrawal of uncurrent Silver Coins . . .	35,084	9 5
					4,02,645 0 6
					38
To GAIN ON COINAGE OPERATIONS :—			By MISCELLANEOUS CHARGES :—		
Gain by Assay benefit . . .	84	0 0	Pyx coins to Royal Mint . . .	999	13 5
Gain by understandard weight and fineness of new coins issued . . .	57,872	8 0	Other items . . .	342	12 5
Gain by overstandard value of uncurrent Silver Coins withdrawn from circulation . . .	573	8 0			1,332 9 10
Other items . . .	12,485	9 0	By COPPER, BRONZE AND NICKEL :—		
			Used as alloy . . .	64,135	10 4
			Used for contingent purposes . . .	852	10 6
					64,988 4 10

# **TO CASH RECEIPTS :—**

For scales, weights and other articles supplied and work done for private individuals . . . . .  
 For old Stores, etc., sold . . . . .  
 Rents recovered from residential quarters . . . . .  
 Cost of Electric current consumed . . . . .  
 Miscellaneous (including merchant's silver melting fees) . . . . .

27,411 6 7  
 91 0 0  
 ...  
 ...  
 11,703 0 3

7,60,450 11 1

# **TO ASSAY OFFICE RECEIPTS :—**

Assay fees on Indian Mines gold . . . . .  
 Assay and melting fees received direct by Assay Department . . . . .  
 Other items . . . . .

3,188 0 0  
 46,020 0 0  
 1,757 8 0

2,99,749 13 9

# **TO GOLD WORK :—**

Melting fees on Indian Mines gold . . . . .  
 Do other gold . . . . .  
 Recoveries . . . . .

8,790 0 0  
 11,582 4 0  
 480 15 6

1,54,770 9 4

Carried over .

16,83,937 1 4

# **BY SALARIES AND ESTABLISHMENT :—**

Fixed Establishment . . . . .  
 Compensation in lieu of Private assay fee . . . . .  
 Extra Establishment and overtime pay . . . . .

2,16,185 4 5  
 8,926 13 5  
 5,35,338 9 3

# **By LOCAL STORES :—**

Coke, Coal, Charcoal, etc. . . . .  
 Liquid fuel . . . . .  
 Oil, Grease and Tallow . . . . .  
 Acids . . . . .  
 Iron, Brassmongery, etc. . . . .  
 Metals . . . . .  
 Wood for Boxes . . . . .  
 Bullion Trucks, Moulds, etc. . . . .  
 Electrical Stores . . . . .  
 Miscellaneous . . . . .  
 Gold, Silver and copper for medal work, etc. . . . .

1,05,826 15 6  
 931 6 0  
 21,521 10 5  
 3,148 15 6  
 12,487 0 2  
 12,667 4 3  
 34,766 9 1  
 3,031 9 9  
 3,379 13 0  
 90,902 14 7  
 11,135 11 6

# **By ENGLISH STORES :—**

Value of Stores used . . . . .  
 Less 1-5 freight charged as below . . . . .

1,54,817 1 4  
 46 8 0

Carried over

1,54,770 9 4



**Account of the total Revenue and Expenditure of the Bombay Mint during the year 1918-1919—continued.**

[illegible]

TOTAL	...	52,15,654 9 11	By P. W. D. CHARGES :—		...	6,997 8 3
			Repairs and Alterations to Buildings .			
Total Brought down	...	52,15,654 9 11	By MISCELLANEOUS CHARGES EXTERNAL TO MINT—		624 11 1	1,862 10 8
			Stationery . . . . .		1,237 15 7	
			Printing . . . . .			
To <i>pro forma</i> Receipts :—	2,89,751 6 9		TOTAL		...	18,15,066 2 9
Percentage on value of Nickel coins manufactured . . . . .	...		By Balance		..	34,00,588 7 2
Medals for Royal Army Temperance Association . . . . .	...		TOTAL		...	52,15,654 9 11
Weights supplied to Treasuries . . . . .	...		Total Brought down		...	18,15,066 2 9
		2,89,751 6 9	By <i>pro forma</i> Charges :—		32,008 0 0	
			1/6 of salaries of superior servants . . . . .		756 0 0	
			1/16 of salaries of inferior servants . . . . .			32,764 0 0
			Interest on—			
			Capital account valued at . . . . .		32,88,053 0 0	
			Average Silver balance . . . . .		1,30,286 0 0	
			" Bronze " . . . . .		3,04,945 0 0	
			" Nickel " . . . . .		68,053 0 0	
			Europe Stores . . . . .		2,31,003 0 0	
			@ 3½ per cent. on . . . . .		40,22,340 0 0	
			By Balance		...	1,40,782 0 0
GRAND TOTAL	...	55,05,406 0 8	GRAND TOTAL		...	35,16,793 13 11
						55,05,406 0 8

## Abstract of Capital Account of the Bombay Mint to the end of the year 1918-19.

	Land.	Building.	Plant.	TOTAL.		Land.	Building.	Plant.	TOTAL.
	Rs.	Rs.	Rs.	Rs.		Rs.	Rs.	Rs.	Rs.
Total Expenditure on Capital Account brought forward from last year .	12,66,995	14,58,897	7,08,566	34,34,458	Value of Stores lost or destroyed . . .	.....	.....	.....	.....
Expenditure during the year 1918-19 by Public Works Department . . .	.....	.....	.....	.....	Value of Building demolished . . .	....	.....	....	.....
Other Items . . .	.....	*44,112	90	44,202	Depreciation at 5 per cent. on Plant and 3 per cent. on Building . . .	.....	43,767	35,428	79,195
					Value of land and Plant handed over to Royal Mint, Bombay . .	48,046	.....	63,366	1,11,412
					Balances .	12,18,949	14,59,242	6,09,862	32,88,053
TOTAL Rs. .	12,66,995	15,03,009	7,08,656	34,78,660	TOTAL Rs. .	12,66,995	15,03,009	7,08,656	34,78,660

\*This includes Rs. 23,417 expended on the construction of Gold Refinery.

## No. II.

## Statement of the coinage of the Bombay Mint for the year 1918-19.

	Tale of pieces.	Nominal value.				Tale.	TOTAL.			REMARKS.
		Value.					Value.			
		Rs.	A.	P.	Rs.		A.	P.		
SILVER—										
Rupees	240,606,326	24,06,06,326	0	0						
Half rupees	10,324,667	51,62,333	8	0						
Quarter rupees	...	...	0	0						
Eighth rupees	...	...	0	0						
British Dollars	...	...	0	0						
Straits 10 cents—400 fine	8,700,284	(a) { 8,77,700	0	0						
5 " —400 "	3,210,929	/ { 1,60,894	0	0						
Egyptian Ten Piastres	90,001	(b) { 98,168	0	0						
" Five "	180,007	{ 98,190	0	0						
" Two "	1,600,036	{ 3,49,363	0	0	264,712,250	24,73,52,974	8	0		
GOLD—										
15 Rupees Gold Coins	2,109,703	3,16,45,545	0	0						
Sovereigns	*1,295,372	1,94,80,580	0	0	3,405,075	5,10,76,125	0	0		* By Royal Mint, Bombay, at Rs. 15 per £1.
NICKEL—										
One anna	80,692,469	50,43,279	5	0						
Two anna	8,018,658	10,02,332	4	0						
Egyptian Five Millimes	872,069	67,040	4	10	89,583,196	61,12,651	13	10		
GRAND TOTAL	...				357,700,521	30,46,41,751	5	10		

(a) These figures represent the outturn value of the cents in Standard tolas.

(b) Do.

do.

Piastres

do.

## III.

## Statement showing the Cost of Miscellaneous Work done in the Bombay Mint during the year 1918-19.

Description.	Amount.	Total.	REMARKS.
	Rs. A. P.	Rs. A. P.	
<b>RECEIPT.</b>			
Melting fees on Indian Mines gold and Merchants gold, silver and copper.	30,871 11 0		
Receipt for Medals, Seals, Stamps, etc.	17,065 14 7		
Adjusting Weights . . . . .	3,539 6 0		
Sale-proceeds of Treasure Trove coins .	772 12 0		
Miscellaneous . . . . .	43,781 13 6	96,031 9 1	
<b>EXPENDITURE.</b>			
Melting Labour . . . . .	5,079 0 0		
Engraver's do. . . . .	....		
Workshop do. . . . .	19,665 13 11		
Jeweller's do. . . . .	....		
Stores used (including gold, silver and copper).	38,854 7 7	63,599 5 6	
<b>Net Profit Rupees .</b>		32,432 3 7	Including Rs. 1-1-0, profit on sale of Treasure Trove coins.

## IV.

Statement of Counterfeit Coins received at the Bombay Mint, showing also those cut and broken at the Treasuries, compiled from the Quarterly Returns furnished by Treasury Officers during 1918-19.

Name of Province.	Nominal value of remittances of uncurrent coins received at the Mint in thousands of rupees.	COUNTERFEITS RECEIVED AT THE MINT.												REMARKS.
		In remittances of uncurrent coins from Treasuries.				From Treasury and other Officers under Art. 581, C. A. Code, and Government Resolution No. 1004-A., dated 21st February 1901.				Received at the Mint for examination.				Counterfeit coins cut at the several Indian Treasuries as per Quarterly Returns furnished by the Treasury Officers and Railway Administrations under Art. 591, C. A. Code, and Government Resolution No. A-6192, dated 10th December 1901.
		Rs.	½Rs.	¼Rs.	1/16Rs.	Rs.	½Rs.	¼Rs.	1/16Rs.	Rs.	½Rs.	¼Rs.	1/16Rs.	
Bombay . . .	243	68	1	9	21	48	...	...	27	55	7	7	1	5,509 253 796 799
India . . .	...	..	..	...	...	14	..	..	..	..	..	..	..	..
Quetta (Baluchistan)	...	..	..	...	..	2	..	1	1	..	..	..	..	..
Madras . . .	523	34	5	19	21	31	..	6	124	8	...	2	1	5,433 415 726 1,553
Punjab . . .	381	34	0	4	11	...	..	..	...	137	19	37	24	28 2
United Provinces of Agra and Oudh.	...	...	...	...	...	..	..	..	...	..	..	..	..	49 1 4 4
Central Provinces .	92	12	...	1	...	5	..	...	...	28	..	..	..	607 27 33 20
Hyderabad (Deccan)	11	2	...	...	...	...	...	1	...	...	..	..	..	57 7 10 12
Rajputana . . .	244	10	3	...	...	..	..	...	...	89	5	1	...	1,475 74 103 72
Central India . .	25	4	...	...	...	...	...	...	...	9	..	..	..	347 7 16 25
Burma . . .	...	...	...	..	...	...	...	...	...	...	...	...	...	..
TOTAL .	1,519	164	9	33	53	100	...	8	152	326	31	47	26	13,500 784 1,690 2,485



# HIS MAJESTY'S ASSAY OFFICE, BOMBAY.

No. 76, dated 28th May 1919.

From—Lieutenant-Colonel F. CUNYNGHAME HUGHES, I.A., Assay Master, Bombay,  
To—The Controller of Currency, Calcutta.

I have the honour to submit the following report on the working of the Assay Department, Bombay, for the official year 1918-19.

2. The appended statement gives the number of assays made during the year :—

Description.	1918-19.		1917-18.	
	Number.	Total.	Number.	Total.
GOLD.				
Assays on gold from all sources . . .	12,307	13,235	8,700	9,040
Check assays on fine gold . . .	928		340	
SILVER.				
Assays on silver received for coinage .	864	74,723	5,776	48,111
„ alligated for silver standard coinage	40,483		24,122	
„ Pyx coins . . .	19,943		11,794	
„ „ Hyderabad Mint . . .	4,457		...	
„ from other sources . . .	7,309		5,855	
Check assays on fine silver . . .	1,667		564	
MISCELLANEOUS.				
Parting assays . . . . .	60	962	82	182
Assays on various metal and ores . . .	893		94	
„ on Mint drosses . . . . .	9		6	
Total for the year . . .	...	88,020	...	57,333



3. The total number of the gold assays from all sources during the year amounted to 13,235, of which 6,960 were done for the Mint.

The Mint assay chiefly represent work for the Mysore Mines and Indian gold coins :—

Number of Assays.	Source of gold.
1,716	Mysore gold (mines).
5,116	Mint gold for coinage.
126	Miscellaneous.

4. Average fineness per mille of Silver Meltings for coinage :—

	Average for the year 1918-19.	Average for the year 1917-18.
Rupees . . . . .	915·971	915·857
10 Cents . . . . .	395·327	596·791 and 394·977
5 „ . . . . .	394·003	...
20 Piastres . . . . .	..	832·179
10 „ . . . . .	831·924	831·999
5 „ . . . . .	831·779	832·128
2 „ . . . . .	831·143	831·061

5. *Gold in Silver Coinage.*—The average proportion of gold found by monthly parting assays in the silver Pyx coins was :—

For Rupees . . . . .	·040	<i>per mille.</i>
„ Half-rupees . . . . .	·045	„
„ 10 Cents . . . . .	·012	„
„ 5 „ . . . . .	·016	„
„ 2 Piastres . . . . .	·030	„

The coinage of the year was computed to contain 3,776 troy ounces of gold in value about £16,010-4-9.

6. *Pyx trial of Silver coins.*—The following tables give the details of Pyx trials of Silver coins for weight and fineness:—

*Trials for weight.*

Denomination of coins.	Number of trials.	Total number of coins weighed	Average weight in grains.	Number of coins above the legal remedy for weight.	Number of coins below the legal remedy for weight.
Rupees . . . .	2,406	24,100	179·999	1	3
Half-rupees . . . .	103	1,030	89·998	..	..
Straits 10 Cents . . . .	*88	...	...	...	.
„ 5 „ . . . .	*32	...	...	..	..
Egyptian 10 Piastres . . . .	1	10	216·150	...	..
„ 5 „ . . . .	2	20	108·030	...	..
„ 2 „ . . . .	16	160	43·245	...	...

\* 100 coins weighed together.

*Trials for Fineness.*

Denomination of coins.	Number of trials.	TOTAL NUMBER OF COINS ASSAYED.		AVERAGE FINENESS <i>per mille</i> OF COINS ASSAYED.	
		Singly.	In groups after melting.	Singly.	In groups after melting.
Rupees . . . .	2,406	12,645	48,140	916·509	916·517
Half-rupees . . . .	103	595	2,060	916·629	916·668
10 Cents . . . .	88	445	4,480	396·858	397·739
5 „ . . . .	32	200	2,560	394·576	395·325
10 Piastres . . . .	1	5	20	832·500	832·700
5 „ . . . .	2	10	40	832·810	832·750
2 „ . . . .	16	80	1,280	832·836	832·881

Of Rupees assayed singly 8 were found above legal remedy and 10 below. On retrial of 10 fresh coins from the same lakh all were found within legal remedy, except on two occasions when two coins were found assaying 900·9 and 900·5, 914·1 and 914·7 respectively.

These results were duly reported at the time of occurrence to the Master of the Mint, who took necessary action thereon.

In the case of Straits Settlements 5 Cents, 13 coins were on first trial found below remedy. In three cases a second trial discovered other coins below remedy, which was duly reported at the time to the Master of the Mint. All other denominations of coins submitted for assay were found within legal remedy for fineness.

7. *Cupro-nickel assays*.—The Cupro-nickel assays done during the year are given in the following tables :—

Months.	Description of coins.	Number of coins.	FINENESS.	
			Copper.	Nickel.
April 1918 . . .	Nickel two-anna coin wasters.	105	75·0	24·8
May 1918 . . .	Nickel one-anna coin wasters.	70	74·9	25·0
June 1918 . . .	Ditto .	20	74·9	24·8
" " . . .	Nickel two-anna coin wasters.	70	74·9	25·0
July 1918 . . .	Nickel one-anna coin wasters.	120	75·2	24·5
" " . . .	Nickel two-anna coin wasters.	110	74·9	24·8
August 1918 . . .	Ditto .	95	74·6	25·0
" " . . .	Nickel one-anna coin wasters.	90	75·0	25·0
October 1918 . . .	Ditto .	120	75·0	24·6
" " . . .	Nickel two-anna coin wasters.	85	75·0	24·4
" " . . .	Five millieme coin wasters.	35	75·0	24·6
December 1918 . . .	Nickel one-anna coin wasters.	125	74·8	24·4
" " . . .	Nickel two-anna coin wasters.	110	74·8	24·6
January 1919 . . .	Nickel one-anna coin wasters.	120	74·8	24·6
" " . . .	Nickel two-anna coin wasters.	110	76·8	22·6
February 1919 . . .	Nickel one-anna coin wasters.	125	84·2	15·4
" " . . .	Ditto	105	80·4	19·2
March 1919 . . .	Nickel two-anna coin wasters.	20	79·8	19·8
" " . . .	Nickel one-anna coin wasters.	140	79·2	20·5

8. *Miscellaneous Assay*.—Of the 893 assays under the head " Assays on various metals and ores " 86 assays were made on counterfeit coins and samples of nickel and copper received from the Mint Master.

9. The following additions and improvements were made to the office during the year under review. (1) A room for Volumetric Assay of silver by the "Gay Lussac" process was erected adjacent to the office. The introduction of this method of assay as a subsidiary to the ordinary method, has proved valuable in enabling pyx coins to be passed without delays involved by retrials in the ordinary way. (2) A mechanical shaker for shaking bottles was also installed. This has almost entirely superseded the old method of hand shaking. It saves time, labour, and does the work more efficiently.

10. On a comparison of the number of assays made during the year under review with that of the previous year it will be seen that the work performed has been exceedingly heavy; much heavier in fact than in any previous year.

11. In addition to the very heavy silver coinage which has continued throughout the whole year under review, the coinage of gold threw extra work and responsibility on the whole staff.

I am happy to report that the ungrudging co-operation of all members of the Assay Office staff has enabled me to carry through the year's work satisfactorily.

12. The post of the Assay Master was held by Lieutenant-Colonel F. Cunynghame Hughes, I. A., from 28th April 1918 to the end of the financial year.

The post of the Deputy Assay Master, Bombay, was held by Lieutenant-Colonel F. Cunynghame Hughes, I. A., from 1st to 27th April 1918, Mr. U.A. Spence held charge of the duties of the appointment of Deputy Assay Master, from 5th June 1918 to 10th January 1919 inclusive, and Mr. C. R. Robson, who was appointed to this office from the Ottawa branch of the Royal Mint, from 16th January 1919 to the end of the financial year. Mr. Kahan, Deputy Master of Royal Mint Branch, assisted in the Assay Office from 1st May till 4th June 1918.







